

What is claimed is:

- 1 A semiconductor laser structure comprising an active laser layer of high refractive index; on each side of the active layer, a graded-index layer; and on each side of the respective graded-index layer a cladding layer of low refractive index and at least one optical trapping layer inserted within one of the cladding layers *wherein*:
 - 5 (a) said at least one optical trapping layer, is thin compared with its distance from said active layer and
 - (b) said cladding layers have substantially the same, uniform refractive index.
- 2 A semiconductor laser structure as claimed in claim 1 in which said graded index layer has a refractive index that changes continuously through its thickness.
- 10 3 A semiconductor laser structure as claimed in claim 1 in which said graded index layer has a refractive index that changes according to a linear refractive index gradient through its thickness.
- 4 A semiconductor laser structure as claimed in claim 1 in which said graded index layer has a refractive index that changes according to a parabolic refractive
 - 15 index gradient through its thickness.
- 5 A semiconductor laser structure as claimed in claim 1 in which there is at least one said optical trapping layer inserted in the said cladding layer on the side of the active layer that is nearer to a substrate on which the device is formed.
- 6 A semiconductor laser structure as claimed in claim 1 in which said at least
 - 20 one optical trapping layer has a refractive index about equal to the highest refractive index in said graded-index layers.
- 7 A method of making a laser comprising forming on a substrate by epitaxial growth a layer structure comprising:
 - an active laser layer of high refractive index; on each side of the active layer,
 - 25 a graded-index layer; and on each side of the respective graded-index layer a cladding layer of low refractive index and at least one optical trapping layer inserted within one of the cladding layers *wherein*:
 - (a) said at least one optical trapping layer, is thin compared with its distance from said active layer and
 - 30 (b) said cladding layers have substantially the same, uniform refractive index; applying electrodes and cleaving to form mirrors.
- 8 A method as claimed in claim 7 in which said layer structure is formed by a

technique selected from molecular beam epitaxy, metal-organic chemical vapour deposition, metal-organic molecular beam epitaxy and chemical beam epitaxy.

9 A method as claimed in claim 7 including the step of pattern etching to form a ridge.

5 10 A method as claimed in claim 7 in which the applying of electrodes comprises the use of a patterned deposit of silicon nitride.